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ABSTRACT

Two experiments are reported in which a cognitive (attributional) model of achievement motivation is applied to two achievement-related behaviors, persistence and selection of intermediate-risk tasks. Results of Experiment I indicated that S's perceived effort expenditure was related to persistence for high achievers. In Experiment II, high achievers made more intermediate risks than low achievers. There were no significant differences within achievement groups across public and private attributional conditions. Results were discussed in terms of establishing environmental conditions conducive to the performance of achievement related behaviors. (Author)

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Perceived Effort Expenditure as a Factor in Achievement-Motivated Behaviors

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Recent attempts to extend Heider's attributional model of person perception to the area of achievement motivation have important practical as well as theoretical implications. Specifically, it has been hypothesized (Kukla, 1972) that if causal attributions for success and failure determine achievement-related behavior, then a change in attribution will result in a corresponding change in behavior.

One consistent finding has been that high achievers more often attribute outcomes to the motivational factor, effort, than do low achievers (Weiner and Kukla, 1970; Weiner et al., 1971; Kukla, 1972). That is to say, for a high achiever, any variation in outcome is more likely to be attributed to a concomitant variation in effort expenditure.

Effort can be classified along two dimensions: a stability dimension and a locus of control dimension (Weiner and Kukla, 1970). Along the stability dimension, effort would be classified as an unstable factor, as opposed to a more enduring characteristic such as ability. On the locus of control dimension, effort is an internally controlled quality of the person as opposed to an environmental factor such as luck. Effort can thus be jointly classified as an

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internal-variable causal factor, as it is under direct control of the person undertaking the activity.

Therefore, a person who fails at a particular task and attributes that failure to a lack of effort should: 1) approach the same or similar tasks in the future with the thought that he is likely to succeed if he tries harder; 2) increase both the intensity and duration of his efforts to obtain a successful outcome; and 3) prefer tasks of intermediate difficulty which provide moderate risk. Weiner et al. (1971) note that subjects believe effort to be the most important outcome determinant at tasks of intermediate difficulty.

If, in fact, attributions do serve as the cognitive mediators between perception and action, and if environmental manipulations can be constructed in such a manner as to foster specific causal ascriptions (particularly effort), it seems plausible that approach, persistence, and risk behaviors can all be modified; i.e., one might produce actions usually associated with high or low achievement groups (Kukla, 1972).

The purpose of the present experiments was to further explore the possibilities of changing achievement-related behaviors by influencing the mediating cognitions (specifically, by modifying attributions to the motivational factor, effort). The cognitive hypothesis was investigated by utilizing the behavioral patterns which distinguish high from low achievers. It was hypothesized that under the condition of promotive outcome interdependence Ss would attribute failure less to a lack of effort than under the condition of contrient outcome interdependence, and thus persist less under the former

condition. Similarly, it was predicted that in the condition of public attribution of outcome Ss would attribute failure to lack of effort to a greater degree than in the private condition.

EXPERIMENT I

Method

The subjects were 48 male undergraduate volunteers from the University of Massachusetts, Amherst, who received experimental credit for their participation.

The Revised and Condensed Achievement Scale for Males (Mehrabian, 1969) was administered one week prior to experimentation.

Ss were seen in pairs (randomly determined) and seated side by side at separate desks, facing the experimenter. Each subject was given a set of ten cards with an anagram printed in the center of each. They were instructed to rearrange each group of letters into an English word within a thirty second period. They were also told that their success in the task depended on solving seven of the ten puzzles. In fact, the difficulty level of the items was manipulated so that six of the anagrams were easily solvable while four were insolvable. Therefore, all subjects "failed" the task.

Subjects were divided into three conditions of outcome interdependence. In the promotive interdependence group, instructions indicated that both members of the pair had to succeed in order that the outcome of either be considered a success. In the contrient interdependence group, Ss were told that beside the absolute criterion of seven correct solutions, only one member of the pair could succeed--

the one with the most correct solutions. The third group of subjects were given no further instructions beyond the criterion of success as seven solutions (neutral group).

At the completion of the tenth anagram, Ss were asked to count the number of solved items and indicate their tentative outcome by marking P (pass) or F (failure) on an index card. The cards were collected by E who then told the subjects to rate the extent to which their failure was attributable to a lack of effort expenditure, by placing an "X" on a 10-point scale, anchored in the extremes, in answer to the following question: "How hard did you try to succeed at this task?" (1 = not at all, 10 = extremely hard).

Following this rating procedure, Ss were told that they could return to any failed item(s) and attempt a solution. They were to signal E by putting down their pencil when they had completed the missed items or had given up. E recorded the amount of time spent by each subject on the failed items.

Results

Ss were divided into high and low achievement groups by a median split of the Mehrabian Scale scores.

None of the subjects misperceived an incorrect scrambling of letters as a success. Only three Ss (two low achievers and one high achiever) missed more than four anagrams, so that almost all Ss attempted to solve the four remaining items.

The achievement-related behavior under consideration, persistence in the face of failure, was measured in terms of time spent on missed

items. Table 1 shows the amount of time spent by subjects under each condition.

Insert Table 1 about here

High achievers persisted for a significantly longer period than did low achievers ($F = 6.44$, $df = 1/42$, $p < .025$). The three outcome groups differed significantly in the amount of time spent on the failed items ($F = 3.96$, $df = 2/42$, $p < .05$) with the promotive groups persevering least. Further analysis indicated that only the high achievement group showed significant changes in persistence over conditions. There was also a significant achievement x condition interaction ($F = 3.33$, $df = 2/42$, $p < .05$).

Finally, results showed that perceived effort differed significantly over outcome interdependence conditions, being greatest in the promotive condition and least in the contrient condition ($F = 3.43$, $df = 2/42$, $p < .05$). There was no significant difference in perceived effort between achievement groups ($F = 2.74$, $df = 1/42$, $p < .10$).

EXPERIMENT II

In experiment I, significant changes in persistence as a function of experimental conditions were observed only for the high achievement group. It was assumed that promotive outcome interdependence increased perceived effort expenditure ("I tried hard because I was being depended upon"). This decreased the possibility of

TABLE 1

Mean Extent of Perseverence (in minutes)
According to Achievement Motivation
Level and Perceived Outcome Interdependence

Achievement Group	Outcome Interdependence Group		
	Promotive	Contrient	Neutral
High	2.41	4.20	3.75
Low	2.52	3.08	2.76

(n=8 for each cell)

high achievers attributing their failure to lack of effort (which, according to the literature (Weiner, et al., 1971) is a usual causal ascription for failure).

The purpose of the second study was to compare high and low achievers on a number sequence task under conditions of public and private attributions of failure. It was hypothesized that Ss in the public condition would attribute their failure to a lack of effort more often than Ss in the private condition.

Method

Thirty-two male undergraduate volunteers at the University of Massachusetts served as subjects. As in the previous experiment, Ss were divided into high and low achievement groups by a median split on the Mehrabian Scale. They met with E in pairs, in a situation identical to that of experiment I.

Ss were presented with ten cards, each containing a row of five numbers. The task was to complete the digit sequence by filling in the next number. Scoring of responses and ratings of attributions were conducted in a procedure identical to that described in Experiment I.

Subject-pairs were assigned to one of two conditions. Ss in the public attribution condition were informed before their attribution rating that they would announce their effort attribution to E and to the other member of the pair. In the private condition, no mention was made of publicly indicating attribution ratings.

Following the effort ratings, Ss were presented with twenty more digit sequence items, each on a separate page of a booklet. This time, they were given six possible answers and asked to circle as many as they wanted to, although only one of the answers was the correct one. Actually, the numbers were sequenced randomly.

The subjects then recorded their twenty responses. They were allowed thirty seconds for each responses. For purposes of analysis, an intermediate-risk response was considered to consist of three or four answers. A response of one, two, five or six digits was interpreted as an extreme risk.

Results

One five Ss (all low achievers) missed more than six items. No subjects reported success with the task.

Table 2 shows that under the public attribution condition, Ss made more intermediate-risk responses than in the private condition, but the difference was not statistically significant, ($F = 1.88$, $df = 1/28$, $p < .20$).

Insert Table 2 about here

Further analysis indicated that the high achievement group took significantly more intermediate risks (across attribution conditions) ($F = 7.24$, $df = 1/28$, $p < .025$). There was no significant achievement level x condition interaction ($F < 1$).

The analysis of variance also indicated that perceived effort

TABLE 2

Mean Number of Intermediate-Risk Choices
in Relation to Achievement Motivation Level
and Attribution Conditions

Achievement Group	Attribution Group	
	Public	Neutral
High	14.00	12.50
Low	9.38	8.13

(n=8 for each cell)

was rated lower in the public attribution condition than in the private condition ($F = 5.02$, $df = 1/28$, $p < .05$). Once again, there was no significant difference in perceived effort between achievement groups ($F = 2.16$, $df = 1/28$, $p < .20$).

Discussion

In experiment I, the achievement-related behavior of high achievers followed the predictions of the cognitive hypothesis, while low achieving Ss did not behave differently under varying experimental conditions. In experiment II, there were non-significant trends in the hypothesized direction.

A possible explanation of the observed differences between achievement groups is that high achievers may be sensitized to variations in effort expenditure. Low achievers, on the other hand, may perceive effort as less related to outcome than high achievers. If this is the case, any attribution of failure to a lack of effort would not lead to an expectancy shift for similar future tasks. Low expectation, in turn, would lead to avoidance of the tasks and a tendency to choose tasks with very high or very low probabilities of success, thereby minimizing self-evaluation.

If low achievers view effort as inconsequential, it is possible that this perception is related to an over-dependence on others for cues in validating their experience. Jones and Nisbett (1971) suggest that the actor and the observer have divergent perspectives on the same behavior, and thus make divergent attributions for outcome. Furute research should investigate the perceptual-personality correlates of the two achievement groups.

A preliminary study by Tennen (1972) indicated that females are more sensitive than males to social cues when making causal ascriptions. These results suggest that public attribution conditions shou d have considerable impact on females. An extension of the cognitive model promises to be helpful in determining environmental manipulations favorable to producing achievement-related behaviors in females.

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